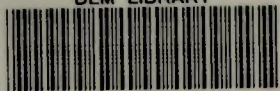


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Colorado River Salinity Control Program  
Federal Accomplishments Report for Fiscal Year 1992

presented to

Colorado River Basin Salinity Control  
Advisory Council

by

United States Department of Agriculture  
Salinity Control Coordinating Committee  
Environmental Protection Agency  
United States Fish and Wildlife Service  
Bureau of Land Management  
Bureau of Reclamation

November 17, 1992

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This report is a compilation of accomplishment reports furnished by the Federal agencies associated with the Colorado River Salinity Control Program. Its purpose is to report Federal accomplishments for fiscal year 1992 to the Colorado River Basin Salinity Control Advisory Council, as required by Public Law 93-320.

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**United States Department of Agriculture  
Colorado River Salinity Control Program Accomplishments  
for Fiscal Year 1992**

The United States Department of Agriculture (USDA) National Salinity Control Coordinating Committee provides this annual report of activities and accomplishments. The USDA Colorado River Salinity Control (CRSC) program is administered through the cooperative efforts of the Agricultural Stabilization and Conservation Service (ASCS), the Extension Service (ES), and the Soil Conservation Service (SCS). The USDA National Salinity Control Coordinating Committee coordinates agency program implementation actions.

**FUNDING**

In fiscal year 1992, \$14.783 million was appropriated for the USDA CRSC program. These funds were used for cost-sharing, technical assistance, information and education, studies, and monitoring and evaluation activities.

**STATUS OF IMPLEMENTATION**

**Big Sandy River, Wyoming**

This was the fifth year of funding for salinity control contracts in the Big Sandy River project. At the end of fiscal year 1992, 43 salinity control contracts had been signed; an additional 13 applications are on file. The application of salinity reduction and wildlife habitat replacement practices is moving ahead very well. In this area, farmers are converting from surface flood irrigation to primarily low-pressure, center-pivot irrigation systems for salinity control. Exceptional reductions in deep percolation are being achieved, resulting in an annual salt load reduction to date of approximately 13,000 tons. This is 25 percent of the project goal of 52,900 tons.

**Grand Valley, Colorado**

At the end of fiscal year 1992, 242 contracts had been signed with individuals and groups. An additional 137 active applications are on file, and another 16 contracts have been prepared and are awaiting funding. The annual salt load reduction achieved to date is approximately 55,000 tons, or 34 percent of the project goal of 163,000 tons.

Application of salinity reduction and wildlife habitat replacement practices continues. Farmers are installing underground pipelines, gated pipe, concrete lined ditches, land leveling, and a variety of other practices. The installation of surge irrigation systems continues to rapidly increase. This was the third year of the



United States Department of Agriculture  
Colorado State College of Agriculture  
and Mechanical Arts  
Fort Collins, Colorado  
June 1917

The United States Department of Agriculture has been very successful in its efforts to increase the production of food and fiber. This is due to the fact that the United States is now producing more food and fiber than it has ever before. This is a great achievement and it is one that we should all be proud of.

Production

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United States, Colorado

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Grand Valley USDA/Bureau of Reclamation (Reclamation) surge irrigation program. Reclamation is providing funding for this cooperative effort.

#### **Lower Gunnison Basin, Colorado**

This was the first year that funds were allocated to the Lower Gunnison No. 3 (Montrose/Delta County) subarea. Implementation is now underway in all four subareas in the Lower Gunnison Basin. This is the largest of the USDA salinity control projects.

At the end of fiscal year 1992, 153 contracts had been signed with individuals and groups; an additional 450 applications are on file.

The application of salinity reduction and wildlife habitat replacement practices is rapidly increasing now that the entire lower Gunnison area is under implementation. The major practices are underground pipelines, ditch lining, land leveling, irrigation water control structures, gated pipe, sprinkler and surge irrigation systems. The annual salt load reduction achieved to date is 20,000 tons, or 7 percent of the project goal of 280,500 tons.

A USDA/Reclamation surge irrigation demonstration project has been initiated in the Lower Gunnison project area.

#### **Uinta Basin, Utah**

The preparation of salinity control contracts continues at a record pace in the Uinta Basin. At the end of fiscal year 1992, approximately 400 contracts had been signed with participants; an additional 122 applications are on file.

Application of salinity reduction and wildlife habitat replacement practices continues at an increasing rate. The major practices are sprinkler irrigation systems, improved surface systems, underground pipelines, and gated pipe. In this area, a number of groups are replacing earthen laterals with pipelines, which provide gravity pressure for onfarm sprinkler systems. The annual salt load reduction achieved to date is approximately 55,600 tons, or 52 percent of the project goal of 106,800 tons.

#### **McElmo Creek, Colorado**

This was the third year that CRSC funds were allocated for financial assistance in this area. At the end of fiscal year 1992, 90 contracts had been signed with participants; an additional 148 applications are on file.







Installation of salinity reduction and wildlife habitat replacement practices is well underway in this area with the installation of sprinkler systems, underground pipelines, and gated pipe. The annual salt load reduction achieved to date is approximately 3,500 tons, or 9 percent of the project goal of 38,000 tons.

## **PLANNING AND INVESTIGATIONS**

### **Uinta Basin Expansion, Utah**

The Uinta Basin Unit Expansion Final Environmental Impact Statement was published in December 1991, and the Record of Decision was issued on March 4, 1992. Implementation is now underway in this area.

### **Price-San Rafael, Utah**

Preparation of the joint USDA/Reclamation planning report and environmental impact statement (PR/EIS) for the Price-San Rafael Rivers Unit continued. The draft PR/EIS was filed with the Environmental Protection Agency (EPA) in September 1991. During 1992, additional information was gathered and interagency meetings were held in an effort to resolve concerns with the USDA voluntary wildlife habitat replacement program. The final PR/EIS is scheduled to be finalized in late 1992.

### **Moapa Valley, Nevada**

The Moapa Valley draft EIS was filed with EPA on July 8, 1992, and the comment period closed on August 31, 1992. The EIS is scheduled to be finalized in 1992.

### **San Juan River Basin, New Mexico**

Salinity investigations were completed in the San Juan River basin east of the Hogback; it was determined that a USDA onfarm salinity control program is not feasible in this area.

In 1992, investigations were initiated in the San Juan River basin west of the Hogback to determine if an onfarm USDA program is feasible. The study area lies within the boundaries of the Navajo Indian Nation. This investigation is scheduled for completion in 1993.

## **INFORMATION AND EDUCATION**

Each USDA salinity project includes an active information and education program. A variety of activities are underway, including demonstrations of irrigation equipment, and water management







techniques, workshops, field days, newsletters, brochures, information bulletins, irrigation studies, and demonstration plots.

Preparation of a USDA salinity control program video began in 1992. Most of the footage in the project areas has been shot by the contractor from Colorado State University. Several farmers who are participating in the program were interviewed. The video is scheduled to be completed in 1993.

### **MONITORING AND EVALUATION**

Monitoring and evaluation activities are underway in the Big Sandy River, Grand Valley, Lower Gunnison Basin, Uinta Basin, McElmo Creek, and Moapa Valley projects. USDA is monitoring the effects of the salinity control program on salt load reductions and wildlife habitat. USDA is also monitoring the economic impacts. An annual report is prepared in each project area to provide information on the monitoring and evaluation activities. Special efforts continue on refining the methods to monitor and track the effects of program implementation on wetlands and other wildlife habitat.

### **RESEARCH**

Scientists from the Agricultural Research Service (ARS) U.S. Salinity Laboratory spent nearly 2 weeks in Colorado monitoring soil salinity in many irrigated fields in the Platte Valley. The scientists used mobilized/automated systems to measure, inventory, and monitor soil salinity of irrigated soils. While in Colorado, ARS also demonstrated the equipment and methods, which were developed by the U.S. Salinity Laboratory, to a large number of agency representatives. The field work confirmed that the automated monitoring equipment and techniques are operational for large-scale monitoring efforts. Colorado SCS is making arrangements to purchase automated monitoring equipment in 1993.

### **RANGELANDS**

In Colorado, USDA agencies cooperated with the Bureau of Land Management (BLM) and other agencies to develop the Colorado rangeland watershed ranking procedures for salinity control potential. The technical team inventoried all 204 rangeland watersheds in the Colorado River Basin in Colorado and identified 12 rangeland watersheds for salinity control.

### **CONCLUDING COMMENTS**

In each project area, large numbers of farmers have applied for participation in the USDA CRSC program. This indicates the continued willingness of farmers to participate in the program. The USDA National Salinity Coordinating Committee is especially pleased







to report that farmers are moving rapidly ahead with the application of salinity reduction practices. This has resulted in a total salt load reduction of approximately 147,000 tons for the USDA program, or 23 percent of the 641,200-ton annual salt reduction goal for the five active USDA projects.







**Environmental Protection Agency  
Colorado River Salinity Control Program Accomplishments  
for Fiscal Year 1992**

EPA Headquarters and regional representatives, including the Assistant Administrator for Water, toured several salinity projects and were briefed on the salinity program by the Colorado River Basin Salinity Control Forum (Forum) in July 1992.

Comments were prepared on draft EIS's for the Price-San Rafael Rivers and Moapa Valley Units and on the EIS for the Uinta Basin Unit Expansion. The review process included numerous communications and meetings with State agencies, USDA, Reclamation, and the United States Fish and Wildlife Service (FWS) to address wetland and other issues. Technical assistance was provided to Reclamation on the environmental assessment (EA) for the Hammond area of the San Juan River Basin Unit.

The CRSC Program was highlighted by EPA in a publication entitled "The Watershed Protection Approach" for national distribution. The publication encourages an integrated, holistic approach to solving water quality problems.

Readoption of the water quality standards for salinity (in response to the Forum's 1990 triennial review of the standards) was approved by EPA for all Basin States except Utah. Utah's water quality standards were revised to include an updated reference to the salinity standards effective August 12, 1992. For several years, EPA has requested additional information from the Forum and Reclamation regarding the salinity control program plan of implementation and its adequacy to protect the beneficial uses of the Colorado River under various projected hydrologic conditions and sequences. During that time, we have requested copies of the Colorado River Simulation System model runs used as the basis for determining the sufficiency of the Forum's plan of implementation, and we have also requested additional runs to test the improvement in protection of beneficial uses that could result from alternate plans of implementation of salinity control projects.

The Region 8 and 9 Offices of EPA provided partial funding for the United States Geological Survey (USGS) assessment of ground-water contamination in the Aneth area of southeastern Utah. Region 9 has responsibility for all Navajo lands in the Aneth area regarding protection of underground sources of drinking water from contamination caused by improper injection well practices. EPA also provided technical review of draft reports and organized meetings of the Aneth Field Technical Committee, which includes a Forum representative, to coordinate assessment activities.

Colorado River Basin Salinity Control Advisory Council recommendations regarding wildlife habitat replacement on the USDA onfarm salinity program have been addressed by several activities (in addition to the EIS activities discussed above).







- EPA prepared a draft workplan of action items addressing concerns with the wetland replacement program. The draft was revised somewhat by the SCS and distributed to the respective State conservationists for comment in July 1992.
- A meeting was held with SCS staff from Colorado in May to discuss the proposed "Wetland Evaluation Procedures Worksheet" designed to evaluate wetland functions. SCS is refining the worksheet.
- USDA and Reclamation provided a well-organized tour for EPA and FWS of wildlife replacement activities on the Grand Valley Unit in October 1991. We believe that USDA is making a very dedicated effort to encourage wildlife/wetland replacement and to track onfarm habitat gains and losses with this project.
- A meeting was held early in 1992 with Reclamation and FWS to enhance coordination on Reclamation projects that involve wetland impacts.
- Region 8 and Reclamation signed an EPA-funded interagency agreement to search available literature and prepare a report on the functions of wetlands enhanced or created by irrigation. In addition, EPA Region 8 developed a workplan for a project to (1) assess the functions of irrigation-induced and/or enhanced wetlands and (2) develop a procedure using indicators to determine the functions for these types of wetlands. The project is to be initiated in fiscal year 1993 by EPA's Corvallis Environmental Research Laboratory. Because of the relevance to the onfarm wetlands program, SCS has been asked to participate.
- Comments were provided to SCS on its interim monitoring and reporting guidance for the salinity control program, including wildlife/wetland habitat.

A general permit to discharge under the National Pollutant Discharge Elimination System was issued by Region 8 for limited activities within the geographical boundaries of the Southern Ute Indian Reservation in southwest Colorado. The permit covers various activities associated with methane gas production by coalbed degasification and has stringent salinity limits. As of September 1992, three notices of intent had been filed to discharge under this permit.

EPA helped organize several interagency meetings to establish a workplan and funding to develop better planning tools for BLM and USDA field staff involved in Colorado River Basin rangeland salinity control projects. As a result, EPA provided funds to the USDA ARS to initiate a 3-year project to (1) assess the state of knowledge of salinity transport in rangeland runoff in the Colorado River Basin, (2) develop and field-verify techniques for correlating salinity of the runoff water to sediment production estimates, and (3) develop







techniques for identifying salinity sources by chemical ion balances from multiple inflows for estimating the effectiveness of selected range management practices on reducing salt.

Funds were provided under Clean Water Act section 319 to the Basin States to help implement their nonpoint source water quality management programs. However, to date, a relatively minor amount of funding has been provided for salinity control because of priorities established by the States. EPA Region 9 has provided (1) planning funds to Nevada for an assessment of water quality and identification of pollutant sources for "nuisance" water sources to Las Vegas Wash and (2) section 319 funds for a feasibility study of using saline perched aquifer water for nondrinking water purposes in Las Vegas.

EPA, including the liaison from SCS to Region 8 for the nonpoint source program, participated in the identification of the priority rangeland watersheds for salinity control in Colorado.

EPA participated in the various meetings of the Colorado River Basin Salinity Control Forum, Advisory Council, and Work Group and the Interagency Salinity Control Coordinating Committee.







**Fish and Wildlife Service  
Colorado River Salinity Control Program Accomplishments  
for Fiscal Year 1992**

Planning assistance for the Uncompahgre System Optimization and Joint Use Study (East Side Laterals), Hammond Unit (San Juan), and Price San-Rafael Rivers Unit was completed in 1992. Most of the necessary Coordination Act reporting and Endangered Species Act compliance has also been completed for all three projects except for East Side Laterals. National Environmental Policy Act compliance for those projects is now being completed by Reclamation and SCS.

FWS's Reno Field Office commented on SCS's notice of intent to prepare an EIS for the Moapa Valley Unit, and on the March 1992 review draft of the EIS. The draft EIS was prepared and submitted to the public for review in July 1992. The Reno Field Office provided draft comments to FWS's Region 1 Office for submittal to the Office of Environmental Affairs. The document was found to be inadequate in its discussion of the potential for impacts to wetlands and waters of the United States under jurisdiction of the Army Corps of Engineers. There also was no assurance that compensation would be provided for impacts to wetlands lost as a result of the project. FWS recommended that the section on cumulative impacts be expanded to include a discussion of overall wetland losses in the Moapa Valley through past actions, including filling of wetlands, water diversions, capping of springs, ground-water pumping, and agricultural practices that have altered wetlands.

Reclamation's 3-year feasibility study of the Lower Virgin River Unit project for salinity control and water resource development involves a cooperative effort between the Las Vegas Valley District (District) and Reclamation to divert water from the Virgin River basin to the Las Vegas Valley area. The project is a portion of a larger plan by the District to import water from throughout southeastern Nevada to the Las Vegas Valley. FWS, BLM, National Park Service, and Bureau of Indian Affairs are working cooperatively on studies to assess the impact of the proposed withdrawals on resources managed by the Department of the Interior (DOI). FWS's Reno Field Office has been designated to coordinate with Reclamation and to serve on the Water Supply Work Group, an ad hoc committee of technical representatives formed by Reclamation's planning branch for the project. Both the District and Reclamation have contacted several resource agencies, as well as the Virgin River Fishes Recovery Team, in an effort to identify potential environmental impacts. The Reno Field Office will begin to prepare a Coordination Act Report for this project during 1993.

FWS's concerns generally remain focused on wetland losses and the voluntary replacement of wildlife habitat values foregone. FWS's concerns over the lack of progress on the 1,200-acre SCS obligation on the Grand Valley Unit were made known to Reclamation, which had agreed to underwrite the SCS replacement effort. Following a February 1992 meeting, FWS agreed to allow extra time for the voluntary replace-ment program to work, provided appropriate







monitoring of progress continued. Unfortunately, it appears that \$100,000 in funds specifically allocated for wildlife improvements could not be spent in fiscal year 1992. Although considerable interest was shown by local landowners, the ASCS County Committee was only willing to spend \$38,000 of the allotted amount of wildlife habitat replacement. Consequently, only 2.5 acres of wildlife habitat replacement was undertaken in fiscal year 1992. Additional meetings with Reclamation and SCS will follow to help resolve the replacement problem.

Plans for the wildlife improvements at Horsethief Canyon State Wildlife Area continue to be implemented. Included in this effort are a number of ponds specifically designed for the holding and recovery of endangered Colorado River fishes. Additional habitat replacement, concurrent with Reclamation's mitigation responsibility on the Grand Valley Unit, has been reviewed by FWS, and preliminary habitat plans have been developed for these lands. Reclamation, the Colorado Division of Wildlife, and FWS are now cooperating in the review of desert habitat replacement and watering improvements for the Grand Valley Unit.







**Bureau of Land Management  
Colorado River Salinity Control Program Accomplishments  
for Fiscal Year 1992**

In **Arizona**, BLM conducted a soils inventory in Mohave County that concentrated on determining the salinity of soils. The Arizona Strip District Office (Strip District) located in Cedar City, Utah, is undergoing reconnaissance planning in the Bullrush Draw (Kaibab Creek), Clayhole, and Hurricane Wash. Strip District is also maintaining some reservoirs in each of these watersheds. Arizona has held one meeting to initiate ranking of watersheds for salinity control. Safford District is monitoring water quality, sedimentation, and total dissolved solids of San Simon and San Pedro Rivers.

Total dollars spent: \$33,600  
(Salinity budget: \$30,000)

In **Colorado**, BLM conducted a reconnaissance survey of abandoned leaking wells. One was found in Disappointment Valley yielding 20 tons of salt per year (flowing at 2 gallons per minute (gpm) at 4,500 parts per million (ppm)) that could be plugged at a cost of \$2,000. At a cost of \$9 per ton of salt controlled, this task appears to be very cost effective. Existing tasks were reviewed; 19 tasks were found that would control 12,875 tons of salt per year at a cost of \$522,000, or, amortized, less than \$4 per ton of salt controlled. Additionally, BLM is working with Reclamation in the Grand Valley to monitor rangeland watershed treatment to determine if earlier results are appropriate. A gauging station also is to be installed on Vermillion Creek.

Other project activities included:

- Reconnaissance planning at Powder Wash, Vermillion Creek, Evacuation, and two areas in the Uncompahgre River watershed.
- Comprehensive planning for Exclosure and Baking Powder watersheds.
- Implementation at Exclosure, Baking Powder, Grand Valley, Milk/Alkali, and Spring Creek.
- Maintenance at Lower Wolf, Milk/Alkali, Grand Valley, and Horse/Poison.
- Monitoring at Lower Wolf, Milk/Alkali, Grand Valley, Horse/Poison, Elephant Skin, and Spring Creek.

Total dollars spent: \$414,800  
(Salinity budget: \$223,000)







In **New Mexico**, BLM plugged two leaking wells (Aztec Totah) using New Mexico Oil Conservation District (NMOCD) reclamation funds. Twenty similar wells have been identified which need plugging. One well yields 330 tons of salt per year (flowing at 15 gpm at 12,320 ppm). Plugging the well will cost \$85,000, or, amortized, about \$23 per ton of salt controlled. NMOCD also stopped the disposal of production wastes (brine) in unlined pits in the San Juan vulnerable area and enlarged the area. In the Aneth area in Utah, \$20,000 is being spent to determine the source of salinity problems.

Other activities included:

- Reconnaissance planning in the Aneth area.
- Comprehensive planning with a multiparty water quality monitoring team in the San Juan area and developing a spill prevention control system in the Aneth area to prevent release of brine from pipelines.
- Implementation of riparian fencing and oil/gas road upgrades.
- Maintenance, including well plugging and roads.
- Monitoring vegetation successes and oil and gas field compliance.

Total work effort: \$1,156,000  
(Salinity budget: \$46,000)

In **Nevada**, BLM is continuing to operate three gauging stations. The USGS is performing the work to obtain needed baseline data on watersheds in southern Nevada. Other activities include reconnaissance planning in two areas. In general, Nevada is demonstrating some interest in developing a more aggressive salinity control program.

In **Utah**, BLM conducted an inventory of ecological sites on about 2,000 acres in Richfield and Cedar City Districts.

Other activities included:

- Comprehensive planning at Sagers Wash (Moab District) and Alvey Wash (Escalante River in Cedar City District).
- Monitoring two climatological sites and 82 watershed sites.
- Watershed implementation of ten projects at Castle Peak (Pariette) and two projects at Moab, plus fencing of a riparian area by volunteers.







- Placing additional monitoring instrumentation at Sagers Wash and a remote automated weather station at Pariette.

In **Wyoming**, BLM is plugging four wells in the Rawlins District using salinity control program funds. Three more wells in the Rock Springs District need to be plugged; preliminary studies indicate the wells yield 280 tons of salt per year. Plugging would cost \$185,000, or, amortized, about \$57 per ton of salt controlled. Three other wells are being nominated for plugging by the orphan well program (oil and gas funds). Interest is being generated for ranking basin watersheds for salinity control. Muddy Creek (Baggs area) continues to show excellent potential for capturing salt and for improving riparian, wetland, and wildlife habitat. The ranchers are enthusiastic about the results obtained from rejuvenating the channel. Reclamation is assisting with gauging instrumentation at Muddy Creek.

Total work effort: \$156,000, plus any orphan well plugging assistance

(Salinity budget: \$150,000).

BLM budget needs assessment (1922-96)  
(dollars in thousands)

	1992	1993	1994	1995	1996	Total	Percent
Inventory	200	754	644	344	335	2,277	8.97
Reconnaissance planning	20	45	43	17	12	137	0.54
Extension planning	197	330	394	118	78	1,117	4.40
Comprehensive planning	99	356	807	623	400	2,285	9.00
Implementation	1,451	4,669	2,962	3,461	3,475	16,018	63.08
Maintenance	96	244	299	214	262	1,115	4.39
Monitoring	110	256	301	273	436	1,376	5.42
Support	174	224	224	224	224	1,070	4.21
Total	2,347	6,878	5,674	5,274	5,222	25,395	100.01







**Bureau of Reclamation  
Colorado River Salinity Control Program Accomplishments  
for Fiscal Year 1992**

**GENERAL**

The 1991 Joint Evaluation Report shows that Colorado River salinity concentrations continue to fluctuate, as they have over the entire period 1941 to 1992. The year-to-date salinity at Imperial Dam was 770 ppm as of July 1992. Without recommended salinity control measures, the salinity at Imperial Dam is expected to exceed the numeric criteria.

About 1.5 million tons of salt per year must be removed from the Colorado River System by the year 2010 to maintain total dissolved solids (TDS) levels at the numeric criteria of 879 milligrams per liter (mg/L) at Imperial Dam. Reclamation projects currently control about 100,000 tons per year. Overall, an additional 1.25 million tons per year need to be controlled by the year 2010 at a remaining cost of approximately \$600 million.

**Funding**

For fiscal year 1992, \$1,148,004 was appropriated for General Investigations, and \$37,417,000 was appropriated for construction of Reclamation's salinity projects (Grand Valley Unit, Lower Gunnison Unit, Paradox Valley Unit, and Dolores/McElmo Creek Unit).

**Ceiling**

During fiscal year 1992, Reclamation, in consultation with the Forum, initiated an effort to secure a ceiling increase for Reclamation's salinity control program. The current ceiling will be exceeded in fiscal year 1996; an increase of about \$135 million is needed. Reclamation will seek the increase in the next session of Congress.

**GENERAL INVESTIGATIONS**

**Big Sandy River Unit, Wyoming**

Conclusion of planning activities for this unit are pending the plugging of one deep aquifer monitoring well. Reclamation will be requesting proposals from qualified drilling contractors in fiscal year 1993. The well plugging is scheduled for award in 1993.







### **Glenwood-Dotsero Springs Unit, Colorado (Cogeneration)**

Developers are investigating alternatives to the "downtown" Glenwood Springs city site that was turned down by the city planning and zoning commission. An alternative site is being investigated near the existing Rifle, Colorado, cogeneration plant. Public scoping and an EA are underway.

### **Las Vegas Wash Unit, Nevada**

Quarterly monitoring of salinity at 15 sites in the wash continued during fiscal year 1992. Results of the salinity analyses indicated that TDS concentrations continue to decrease, but total salt volume is increasing because of increased waterflow.

### **Lower Virgin River Unit, Nevada**

In April 1992, Reclamation began a cooperative study to determine the technical, economic, and environmental feasibility of a dual-purpose salinity control and water supply project on the lower Virgin River in Nevada. The water would be desalted for use in the Las Vegas Valley. The general plan is to divert water from the Virgin River somewhere between the Nevada-Arizona State line and Lake Mead, run it through a desalting plant, and pipe it to the Las Vegas Valley. The feasibility study will produce a feasibility report coupled with an EIS in one volume. A preliminary findings report is scheduled to be released in April 1993.

### **Nonpoint Source Control, Utah**

Reclamation participated in a cooperative study with the Utah Department of Agriculture, Utah Department of Water Resources, USDA, USGS, and BLM. Reclamation funded a portion of the study (\$100,000 over 2 years) which screened areas in Utah for salinity control potential through rangeland management techniques. Seven areas were identified that will receive further planning and potential implementation through existing BLM and SCS programs.

### **Nonpoint Source Control, Colorado**

Reclamation and BLM are formulating plans to evaluate the effectiveness of grazing management to improve soil and salinity conditions in the Grand Junction area.

### **Sagers Wash and Castle Peak Research and Demonstration, Utah**

These two multiyear studies will evaluate the effectiveness of on-the-ground rangeland management techniques. As lead agency in the salinity control program, Reclamation is responsible for evaluating alternative methods of salinity control. By providing







funds to BLM in a cooperative study, Reclamation will be able to determine the effectiveness of these techniques. These studies were initiated in late fiscal year 1990 and will continue with several years of monitoring.

#### **Palo-Verde Irrigation District, California**

Reclamation continued monitoring water quality in irrigation district drains. In January, when the canals were out of service, district personnel collected water samples from various drains in the district. Reclamation performed a constituent analysis at its Boulder City, Nevada, laboratory. The downward trend in salinity concentrations of the outfall drain is continuing.

#### **Price-San Rafael Rivers Unit, Utah**

The combined Reclamation/SCS draft PR/EIS was printed in August and distributed to the public in September 1991. At \$39 per ton for 161,000 tons of salt controlled, this unit remains one of the most cost-effective in the program and is large enough to make a significant impact on the salt load of the river. Work is underway in 1992 to resolve wetland replacement issues raised during the review of the draft EIS.

#### **San Juan River Unit, New Mexico (Hammond Area)**

Planning continued on this subunit in fiscal year 1992. A PR/EA is scheduled for completion in December 1992. This unit remains one of the most cost effective in the program. Total project impact is estimated at 27,700 tons per year.

#### **San Juan River Unit, New Mexico (Hogback Area)**

Reclamation has received reports and observed saline inflows to the San Juan River in the Hogback area. Hundreds of oil and gas exploration wells have been drilled in this area, raising concerns over mobilization of saline aquifers. One wash has been observed to be discharging saline water with very unusual chemistry. Reclamation will investigate the apparent salt gains along the San Juan River.

#### **Uinta Basin Unit, Utah**

This unit has been proposed for construction by Reclamation and was sent to DOI for review. DOI has requested Office of Management and Budget comment on the budgetary impacts of the unit.







## CONSTRUCTION

### **Dolores/McElmo Creek Unit, Colorado**

Reach 1 of the Towaoc Canal became operational for the 1991 irrigation season and was completed in 1992. The contract for construction of Reach 2 of the Towaoc Canal was awarded in September 1990 and is scheduled for completion in 1993. The Rocky Ford Laterals contract was awarded in 1992 and is scheduled for completion in 1994. Lining of the three sections of the Lone Pine Lateral and the one section of the Upper Hermana Lateral is scheduled for July 1992 through July 1994.

### **Grand Valley Unit, Colorado**

**Price and Stubb Ditch EIS** - The definite plan report and EIS for the Grand Valley Unit were supplemented to include the Price and Stubb Ditches. The purpose of this supplement is to allow concurrent canals and lateral improvement to proceed on the Price and Stubb systems. Cost effectiveness for the canal improvements were estimated at \$45 per ton for 11,500 tons per year of salt reduction. Construction of these facilities started in 1991 under construction cooperative agreements with the Palisade Irrigation District and the Mesa County Irrigation District. Construction will take approximately 3 years to complete. No significant impacts were identified in the report. Replacement of habitat values will proceed as part of the Grand Valley Unit.

**Government Highline Canal Environmental Assessment** - Reclamation prepared an EA to evaluate the impacts of alternative methods of canal lining. The landowners along the canal were concerned with the need for acquiring additional rights-of-way to construct the improvements. Reclamation developed a plan that minimizes the need for right-of-way acquisition without significantly increasing project costs. Construction of Reach 1b was started in 1992 with land acquisition for right-of-way.

**Surge Irrigation Demonstration** - In 1990, Reclamation was asked by USDA to participate in a 2-year surge irrigation research and demonstration program. Because of its outstanding success, Reclamation and USDA will continue this program as part of Reclamation's ongoing construction program.

### **Lower Gunnison Basin Unit, Colorado**

Construction of the winter water portion of the unit is proceeding ahead of schedule and under budget. Projections for completion of the winter water facilities have been moved up 1 year (4-year construction period compared to 5-year). Phase 1 and 3 of 5 have been completed, and work on phase 2 is well underway.







In 1992, a status report was completed on ways to reduce the cost of the canal and lateral lining program through construction cooperative agreements, cost-sharing, and redesign of the delivery system to reduce canal and lateral lengths. Piping the laterals on the authorized portion of the unit was found to be cost effective (\$60 per ton). Preparation of a preconstruction report was initiated in 1992 and will be completed early in fiscal year 1993. Construction of the lateral system is scheduled to begin after the winter water portion of the unit is completed in 1994.

**Paradox Valley Unit, Colorado (Injection well construction and testing)**

Repairs and modifications to the injection facilities have been completed. The well annulus monitoring system and the computer control/data collection system have been modified, the system to provide fresh water for diluting the brine during the 2-year test has been improved, and the operating orders for the facilities have been completed. Aquifer and pump testing with different blends of brine and fresh water were conducted in 1992.











